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(54) **Structured document tags invoking specialized functions**

Etikette für strukturierte Dokumente, die besondere Funktionen abrufen

Etiquettes pour documents structurés qui font intervenir des fonctions particulières

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WO-A-86/05294 **US-A- 4 688 169**

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Description

Background of the Invention

1. Technical Field

The invention disclosed broadly relates to data processing and more particularly relates to the management of display and printing operations for a document by a data processor, so as to comply with proprietary and security restrictions of the document.

2. Background Art

Modern word processing and text editing programs employ structured document architecture to provide greater control and flexibility in the displayed and printed appearance of documents prepared with the programs. Structured document architecture is described, for example, in European patent application EP-A-400 269 (IBM), entitled "A Method for Manipulating Elements Within a Structured Document Using Active Intent Interpretation," by C. J. Bennett, et al., incorporated herein by reference. A structured document can be prepared in accordance with the standardized general markup language, such as is described in the International Standard's Organization Standard 8879-1986. A data stream of text marked up in accordance with the standardized general markup language, will have its text divided into elements consisting of a begin tag and its content and terminated by an end tag, when necessary. Within a WYSIWYG (what you see is what you get) editor, text is displayed to the user as it will appear when it is printed, even though its structure is defined by the begin tags and end tags for each element of text. Formatting of the elements within a structured document is done when the document is displayed to the user. Those elements which fall into the category of commonly used elements include paragraphs, simple lists, ordered lists, bulleted lists, and list items.

Large documents marked up with structured document architecture tags, can be manipulated as an electronic book, by the method described in the copending European patent application EP-A-384 986 (IBM), entitled "A Method for Displaying On-Line Information," by E. Cassorla, et al., incorporated herein by reference. The European patent application EP-A-384 986 describes a method for creating on-line information from the same marked up source material used to create printed information such as a word processor or a markup language source used with a text formatter. A book data stream is provided, in an intermediate format for storing on-line information, specifically designed to be used by a book display program. The data stream captures and preserves structural information about the books, by using the structured document tags. The method is suited to display on-line books in a useable manner on a variety of display devices. A book display program manipulates the book data stream and allows users to interact with the on-line information. The electronic book may be used like a hard copy book, except that it is displayed on a display screen. The method allows readers to treat on-line books as if they were hard copy books, and uses the book data stream as its input.

In WO 86/05294 an electronic text handling system is disclosed, that works like the previously mentioned system Tags are added to the data string, that are interpreted by using a dictionary in the program to access the document with the formatted bare text according to the interpreted mark up code.

Electronic books are frequently communicated, stored displayed and modified in their soft copy form, with hard copies only occasionally made. Authors of such electronic books or documents frequently desire to impose appropriate forms of security treatment for the electronic books so generated and they wish to have any rights of authorship in their works respected. However, the prior art has not provided an adequate means to enforce the author's intentions for the treatment of his electronic books or documents, Although the author may place a copyright notice on his soft copy documents, there is no mechanism for increasing the prominence of that notice. Security labels such as "Company Confidential", "Do Not Copy", or "Do not Distribute", which the author may place on the soft copy of the document, are not readily enforceable.

At present, there are only security systems available as for example disclosed in US 4 688 169, that restrict execution of computer programs by means of machine identification code, allowing a program to run only on a special machine.

Terminology

The following terminology is used in this description, in referring to structured document architecture concepts.

SGML

Standardized General Markup Language. A markup language consisting of tags used to prepare structured documents. Refer to International Standards Organization standard 8879-1986 for a definition and details.

Structured document

A document prepared in accordance with an SGML-compliant type definition.

Element

SGML-defined entity consisting of a begin tag and its alphanumeric string content, and including an end tag, when necessary.

Empty element

An element whose contents are null, containing neither text nor other elements.

Current document position

The document position which determines the current page for display.

Commonly used elements

Those elements which fall into the category of commonly used elements include Paragraphs, Simple Lists, Ordered Lists, Bulleted Lists and List Items.

Tag name

The name given to a set of elements which all abide by the same rules of formatting. Examples of a tag name include **PARAGRAPH, SIMPLE LIST,** and **LIST ITEM.**

Formatted Text Stream

The formatted text stream is the sequence of alphanumeric characters which includes the structured document tags and associated text for the elements comprising the structured document.

Objects of the Invention

It is therefore an object of the invention to provide an improved method and system for managing the soft copy text of a structured document in a data processing system, so as to comply with proprietary and security restrictions of the document.

It is another object of the invention to provide an improved method for managing the display of pages from a structured document, so as to comply with proprietary and security restrictions of the document.

It is still a further object of the invention to provide an improved method for managing the printing of pages of a structured document, so as to comply with proprietary and security restrictions of the document.

It is yet another object of the invention to provide an improved method for managing the writing of a structured document into a bulk storage medium, so as to comply with proprietary and security restrictions of the document.

It is yet a further object of the invention to provide an improved method for managing the telecommunication of soft copies of a structured document, so as to comply with proprietary and security restrictions of the document.

It is still a further object of the invention to provide an improved method for managing the generation of acoustic enunciations corresponding to indicia elements placed in a structured document.

These objects are met by the invention as defined by a method according to claim 1 and a system according to claim 13. Embodiments of the invention are defined in the dependent claims.

Summary of the Invention

These and other objects, features and advantages of the invention are accomplished by the system and method for employing structured document tags to invoke specialized functions. The invention finds application in a data processing system which includes a processor for executing program instructions, a display device coupled to the processor for displaying a plurality of document elements in an ordered sequence in response to the program instructions, a memory in which is stored a structured document with its element tags, and a printer coupled to the processor for printing portions of the structured document stored in the memory. A method is disclosed for managing the display or printing of special indicia contained within the structured document. The special indicia are proprietary notices such as for copyright or security notices such as "Do Not Copy." The method will control the display or printing of the document so as to comply with the proprietary or security notices. The method includes the step of storing in the memory as a part of the structured document, a special indicium element containing a string representing the indicium, the element being identified by a special indicium tag. The method searches for the special indicium tag in the structured document, sets a flag in the memory when the special indicium tag is detected and loads the string representing the indicium into the memory. The method will display the special indicium on selected pages of the structured document when being displayed in WYSIWYG form by the display device. The special indicium can be printed on a cover page or selected pages of a hard copy of the document printed on a printer. Printing, copying and communications commands can be aborted in response to certain security indicia.

This feature can be employed to place a special copyright notice on the first page of the displayed document as it is displayed on the display device. The copyright notice element including the indicium string and its copyright tag preceding the string can be located anywhere in the structured document's formatted text stream. This is referred to as a global tag. If a printer is connected to the system and commanded to print the document, a cover page can be selectively printed, in accordance with the invention, which includes the copyright notice, before the rest of the structured document is printed by the printer.

The special indicium string can also be a security label such as a "Company Confidential" label, which is identified by a security tag preceding the string. In accordance with the invention, the security label can selectively be displayed on all pages which are displayed

in WYSIWYG form on the display device for the structured document. Alternately, if a printer is connected to the system and it is commanded to print the document, then in accordance with the invention, a cover page can selectively be generated upon which is printed the security label. The security label can also selectively be placed on each printed page of the structured document, by the printer.

The special indicium string can be a "Do Not Copy" label. A "Do Not Copy" label can be a special indicium string in the structured document identified by a "Do Not Copy" tag preceding the string, which can then be selectively displayed on all pages when the document is displayed on the display device. Still further, in accordance with the invention, if a printer connected to the system is commanded to print the document, the printing operation will be aborted in response to the presence of the "Do Not Copy" indicium. Still further and in accordance with the invention, if a disk drive storage device is connected to the system, a write to disk command for the document will be aborted in response to the "Do Not Copy" indicium. Still further, if a communications adapter is connected to the system, a transmission command for the document will have its function aborted in response to the "Do Not Copy" indicium.

An additional feature which is provided by the special indicium is the provision of a password. A password string can be embedded within the structured document text and identified by a special password tag preceding the string. When the initial search through the structured document identifies a password tag, before any further display or printing of the structured document is allowed, the method will present the user with a message that the user must enter a password. The password entered by the user, for example, must be identical to the embedded password string within the structured document text.

Only if the user inputs the correct password, will further document display and printing functions be allowed, in accordance with the invention.

Another feature provided by the invention is the provision of local display or sound playing indicia elements. These are designated by local tags for the display of the special indicia only on the page of the document where the tag is located. If a local display indicium tag is provided, then when a particular page from the structured document bearing the local indicium tag is displayed on the display device, the associated special display indicium string will provide for the highlighting or other visual feature on that page. Alternately, if a "play sound" indicium tag is provided, then the string within the sound element will be transmitted to a sound generating device connected in the system when the page of the structured document bearing the local sound indicium element, is displayed on the display device.

Brief Description of the Drawings

These and other objects, features and advantages of the invention will be more fully appreciated with reference to the accompanying figures.

Fig. 1 is a system block diagram of the document manager system, in accordance with the invention.

Fig. 2 is a first example of element tags and associated text.

Fig. 3 illustrates the memory organization of element tags and associated text, for the example of Fig. 2.

Fig. 4 is a diagram of the default parameter table.

Fig. 5 is a diagram of the default parameter table after the initialization process of Fig. 7.

Fig. 6 is a more detailed diagram of the memory image for a second example of the formatted text stream 25, showing in particular the element coordinates 156 associated with each particular element in the formatted text stream.

Fig. 7 is a flow diagram of the initialization process.

Fig. 8, consisting of Figs. 8A and 8B, is a flow diagram for displaying a document.

Fig. 9, consisting of Figs. 9A and 9B, is a flow diagram for printing a document.

Fig. 10 is a flow diagram for communicating a document over a communications link.

Fig. 11 is a flow diagram for writing the document onto a magnetic disk storage medium.

Description of the Best Mode for Carrying Out the Invention

The document manager system shown in Fig. 1 includes a processor 20 connected to a display 26, to a memory 22, to a printer 44, a disk drive 46, a communications adapter 48, a keyboard 50 and an enunciator 52. The processor 20 executes program instructions 24 stored in the memory 22, which are represented by the flow diagrams of Figs. 7-11. The display device 26 coupled to the processor 20 displays in WYSIWYG form, a plurality of document elements such as paragraphs 28 and 38, list 30, which includes list items 32, 34 and 36 shown in the display device 26 of Fig. 1. Cursor 54 is also shown. The elements can include lists which are

either ordered or unordered, and elements can also include graphics as well as text. Of special note is a copyright notice 40 and a "Do Not Copy" security label 42 displayed in WYSIWYG form for the page of the structured document shown on the display device 26 of Fig. 1. The document elements 28-42 are organized in a formatted text stream having an ordered sequence, as can be seen in Fig. 2, using structured document notation, where the ordered sequence is specified by a corresponding ordered sequence of the plurality of element tags. The paragraph 28 in Fig. 2 is shown in the structured document notation with the begin tag [p] and the end tag [/p]. Each element such as the paragraph 28 shown in Fig. 2, is a structured document element having a begin tag [p], the text of the paragraph in this example, and then an end tag [/p]. The begin tag and the end tag serve to identify the element type, in this case indicating a paragraph. The order of occurrence of the WYSIWYG display of paragraph 28 on the display device 26 is determined by the order of occurrence in the formatted text stream of the structured document element representing that paragraph 28 shown in Fig. 2, within the context of the order of occurrence of the other structured document elements, as for example, the list 30 and the paragraph 38.

In accordance with the invention, special strings such as a copyright notice or such as a security label, are embedded within special indicia elements having special structured document tags in the structured document. Specifically, the copyright notice element 40 is a string embedded between a begin tag [cpr] and an end tag [/cpr]. Similarly, the security label string "Do Not Copy" is embedded in the structured document text within a begin tag [sec2] and an end tag [/sec2]. When the processor 20 detects the presence of a special indicium tag such as a copyright begin tag or such as a security label begin tag, it makes special note of their presence within the memory 22, so that when specified display device 26, printer 44, disk drive 46, communications adapter 48 or enunciator 52 functions are requested, corresponding actions are taken in accordance with the type of special indicium. For example, if a "Do Not Copy" security element is identified in the document text, then the printer function will be inhibited if the user requests the printing of the structured document within which the "Do Not Copy" label is identified.

The order of occurrence of the structured document elements such as the paragraph 28, list 30 and paragraph 38, can be determined by their order of occurrence in the formatted text stream stored in the memory 22 as is shown in Fig. 3. Fig. 3 shows that the structured document text with its tags of Fig. 2, have been stored in the memory 22 in a linear sequential order, which is the formatted text stream 25. Paragraph element 28 includes tags 28a and 28b and text 28c. List element 30 includes tags 30a and 30b. List item element 32 includes tags 32a and 32b and text 32c. List item element 34 includes tags 34a and 34b and text 34c. List item element 36 includes tags 36a and 36b and text 36c. Paragraph element 38 includes tags 38a and 38b and text 38c.

The special copyright notice element is represented by the begin tag 40a and the end tag 40b which surrounds the copyright notice string 40c. Similarly, the special security label "Do Not Copy" element is represented by the begin tag 42a, and the end tag 42b, which surrounds the "Do Not Copy" string 42c. In accordance with the invention, when the processor 20 searches through the formatted text stream 25 stored in the memory 22 and detects the presence of the begin tag 40a or the end tag 40b for the copyright string 40c, the processor loads the copyright string 40c into a specified partition 60 of a parameter table 56 in the memory 22 and it sets a flag 62 to indicate the presence of a copyright string, as shown in Figs. 4 and 5. Correspondingly, if the processor 20 detects the presence of the begin tag 42a for the "Do Not Copy" string 42c, the processor will load the string 42c in the memory in a specified partition 60 and will set a flag 62 indicating that this type of security label is present in the structured document.

Still further in accordance with the invention, at the time of initial program loading for the program instructions 24 into the data processing system shown in Fig. 1, a default parameter table 56 is loaded into memory at a pre-specified partition. The default parameter table 56 shown in Fig. 4 will have a set of default values entered therein which are stored in the memory 22. Alternately, the user can enter a profile of values for the parameter table 56. The parameter table 56, as loaded at the initial program loading, will include the characters representing each special tag such as the copyright tag "cpr," a "Do Not Copy" tag "sec2," and the like, as is shown in Figs. 4 and 5. Also included in the parameter table 56 of Fig. 4 will be values indicating the response which the data processing system is to make when particular tagged strings are identified in the document text loaded into the memory 22. For example, if a copyright tag "cpr" is detected in a structured document, then the default parameter table 56 will indicate that if the document is to be displayed on the display 26, the first page displayed will include the copyright notice. If the document is to be printed by the printer 44, then a cover page will be generated with the copyright notice, prior to the printing of the structured document.

Fig. 6 is a more detailed diagram of the memory image for a second example of the formatted text stream 25, showing in particular paragraph coordinates 156 associated with each particular paragraph, heading and other element in the formatted text stream 25. The formatted text stream 25 illustrated in Fig. 6 has structured document tags similar to those referenced above. The structured document tags for the chapter heading is the begin tag [h1] and the end tag [/h1]. Under the chapter heading, there are two elements, the first being a copyright notice element 140 represented by the special tag [cpr] followed by the special copyright notice string "(C) ABC Co 1990" and followed by the end tag [/cpr]. The

second element under the chapter heading is a paragraph element denoted by a paragraph begin tag [p] and an end tag [/p]. The formatted text stream 25 is characterized by a hierarchical organization, in that the first topic heading depicted by its begin tag [h2] and end tag [/h2], is subsidiary to the chapter heading in the hierarchy. Use is made of this hierarchical structure for the formatted text stream 25, to establish the coordinate system 156. The coordinate system 156 is shown in Fig. 6 as it can be stored in memory 22, with four digits representing the hierarchical level of the particular heading or element entry to which the coordinate is associated. For example, the paragraph 142 has a coordinate of h1=1, h2=1, h3=0 and p=2. This means that the element 142 is part of the first h1 chapter heading, part of the first h2 topic heading, and is not part of any subsidiary topic heading to the first topic heading. The p=2 coordinate represents that the paragraph 142 is the second element under the first topic heading.

It is to be noted that there are two local tags in the formatted text stream 25 of Fig. 6, the first being at a first local element 150 which contains the begin tag [locC] followed by the "Sound String," which is followed by the end tag [/locC]. The coordinates for the element 150 are 1101. The first local element 150 will be given effect by playing the desired sound on the enunciator 52, as specified by the sound string, when the page containing the element is to be displayed on the display 26.

Fig. 6 shows a second local element 160 which includes the begin tag [locA] followed by the "Display String," which is followed by the end tag [/locA]. Second local element 160 has the coordinates 1211. The second local element 160 will be given effect on display 26 when the page containing the second local element 160 is displayed by the display 26.

The formatted text stream 25 of Fig. 6 further includes an element 170 which is a security element containing the begin tag [sec2] followed by the string "Do Not Copy," which is followed by the end tag [/sec2]. The copyright notice element 140 and the "Do Not Copy" notice element 170 are global elements which will be given effect, without regard for the location at which the element occurs in the formatted text stream 25.

Fig. 7 is a flow diagram of the initialization of the system of Fig. 1, loading the parameter table 56 into the memory 22 and setting the values of the parameters therein, in accordance with the occurrence of particular special elements which may occur in the formatted text stream 25. The flow diagram of Fig. 7 starts with step 90 which loads the parameter table 56 of Fig. 4, containing the default names of the tags and the default functions to be performed by the display device 26, printer 44, disk drive 46, communications adapter 48, and enunciator 52 in response to the occurrence of any of the special tags occurring in the formatted text stream 25. It is the objective of the flow diagram of Fig. 7 to scan through the formatted text stream 25 and identify special tags for special elements and to load the corresponding strings into the default parameter table 56 and turn on the corresponding flags in the default parameter table 56 so that there results a table 56 such as is shown in Fig. 5.

Step 90 loads the parameter table 56 of Fig. 4 into the memory 22 and step 100 inputs the formatted text stream 25 of the structured document and stores it in memory 22. Step 100 then flows into step 101 where a print session flag is set and a copy session flag is set. As will be described later, the first time that the user wishes to print any portion of the formatted text stream which was input in step 100, special notices can be displayed as set forth for steps 305 and 307 in Fig. 9, after which step 309 will turn off the print session flag so that subsequent commands to print portions of the same document will not result in the repeated display of warning messages and notices. The copy session flag will have a similar effect the first time that the user commands that the formatted text stream be communicated in Fig. 10 or written to a disk as provided in Fig. 11. In Fig. 7, step 101 then flows to step 102. Then step 102 searches for any special indicium tag as specified by the default expressions for the tags in column 64 of the default parameter table 56 of Fig. 4. In step 104, if any special tag is found, then in step 106 the corresponding flag in column 62 of table 56 is turned on. Then in step 107, the string enveloped by the special begin tag and its corresponding end tag is loaded into column 60 of table 56. For example, in the formatted text stream 25 of Fig. 6, the search step 102 will identify element 140 which is a copyright notice string, by the [cpr] special tag. The corresponding flag in column 62 will be turned on and the string "(C) ABC Co 1990" will be stored in the column 60 of the default parameter table 56, as is shown in Fig. 5.

Then, the flow diagram of Fig. 7 will have step 108 determine whether the tag is a global tag. The tags "locA," "locB," and "locC" are all local tags, the rest of the tags represented in column 64 of table 56 being global tags. Since the [cpr] tag is a global tag, a determination is made in step 110 as to whether the tag is a password tag, that is whether it is [pswd]. If it is a password tag, then the process flows to step 112 which asks the user to input the password, the true password being stored in a string within the formatted text stream 25, associated with the password tag. If the user inputs the correct password, as determined in step 114, then the process flows to step 118. However, if the user fails to input the correct password, the process flows to step 116 which aborts any further operations and the process returns to the main program. A notice can be displayed to the user that the password was not correct. Alternately, if the tag is not a password tag as determined in step 110, then a process flows to step 118.

If step 108 determines that the tag is a local tag, as determined by column 64 of the default parameter table 56, then the coordinate for the local tag element is stored in column 66 of the table 56 in step 120. Thereafter, the

process flows to step 118.

In step 118, it is determined if there is any more text to be scanned in the formatted text stream and if there is, then the process flows back to step 102 to search for any additional special indicium tags. Alternately, if there is no more text to be scanned, then the flow returns to the main program. At the end of the operation set forth in the flow diagram of Fig. 7, the default parameter table 56 will be populated as is shown in Fig. 5, with those special elements which have been detected in the formatted text stream 25, having their corresponding text strings loaded into column 60 of table 56, the corresponding flag turned on in column 62 and, for local tags, the corresponding local coordinates loaded in column 66. Fig. 5 shows that there are two global special elements, element 140 which is a copyright notice element and element 170 which is a "Do Not Copy" notice element, and that there are also two local special elements, a sound element 150 and a display string element 160.

Fig. 8 is a flow diagram of the sequence of operational steps for displaying the formatted text stream 25 on the display 26. In step 200, the user requests a WYSIWYG display of the formatted text stream 25. In step 202, a page of the formatted text stream is loaded into a display buffer. In step 204, the default parameter table 56 is interrogated to determine if there is a global copyright flag turned on in column 62. If yes, then step 206 determines from table 56 whether the copyright notice is to be displayed on the first displayed page on the display 26. If yes, then step 208 displays the copyright notice on the first displayed page. The process then flows to step 210 which determines whether table 56 specifies that the copyright notice is to be displayed on all pages displayed on the display 26. If yes, then each page of the formatted text stream 25 which is displayed would include a copyright notice at the appropriate location on the display screen of display 26. However, in the example of Fig. 5, there is no requirement for the display of the copyright notice on each page. The process then flows to step 214 which determines whether a security label with a [sec1] tag has its flag turned on in column 62 of the default parameter table 56. If it does, then the process flows to steps 216 and 218 which are similar to steps 206 and 210, respectively. The process then flows to step 220 which determines whether there is a "Do Not Copy" label corresponding to a [sec2] tag with its flag on in column 62 of the default parameter table 56. If there is, then the process flows to steps 222 and 224 which are similar to steps 206 and 210. In this example, there is a "Do Not Copy" label since the flag is on in column 62. The default parameter table 56 shows that the "Do Not Copy" label is to be applied to every page displayed on the display 26. Therefore, step 224 determines that the "Do Not Copy" label will be displayed on every page.

The process then flows to step 226 which determines whether there is a restriction element present and if so, then the process flows to steps 228 and 230, which are similar to steps 206 and 208. In this example, there is no restriction element corresponding to the tag [rest]. Restriction elements can be for example, a limited rights notice which the author wishes to place in his documentation. Typically the limited rights notice would be placed on the first page to be displayed to the reader, along with copyright notice and any security notice such as a confidential information label.

The process then flows to step 232 which determines if there are any local tags present, by determining if there are any corresponding flag bits turned on in column 62 of table 56. In this example, there are two bits turned on in column 62. Therefore, the process of Fig. 8 flows to step 234 which determines if the local coordinates in column 66 of table 56 are on the current page being displayed on the display 26. If they are, then the process flows to step 236 to determine if the local special element is a sound-type element having a "[locC]" tag. If it is, then the process flows to step 238 where the sound string is transferred from column 60 in table 56 to the enunciator 52 associated with the processor 20 to play the sound specified by the sound string. This is the case for the example of Fig. 5, where if the page being displayed on the display 26 includes the element coordinates 1101, then the sound string is played at this time. The process then flows to step 240 which determines if there is a local special element of the display type, having a tag "[locA]," for the page currently displayed on the display 26. If yes, then step 242 either displays the corresponding string stored in column 60 of the default parameter table 56 or alternately, executes a display-type command, such as a reverse video highlight for the page being displayed. This is the case for the example of Fig. 5 where, if the element coordinate 1211 is present in the page being displayed on display 26, then a reverse video highlighting is provided for the page being displayed.

The process of Fig. 8 then flows to step 244 to determine whether there is another page of text in the formatted text string 25 to be displayed. If there is, then the process flows to step 202 to load the next page into the display buffer and the flow diagram of Fig. 8 continues. If not, then the process returns to the main program.

Fig. 9 is a flow diagram of the sequence of operational steps for printing the formatted text stream 25 with the printer 44. The process begins with step 300 wherein the user requests the printing of the formatted text stream. Then step 302 loads a page into a buffer for printing. Step 304 interrogates the default parameter table 56 to determine if there is a special copyright element with a flag bit on in column 62. The process then flows to step 305 which determines if the print session flag is on. If it is on, then the process flows to step 307 where a notice is displayed on the display 26 with the copyright string. A prompt symbol is presented to the user requesting whether the user wishes to continue. The user must affirmatively indicate his desire to continue by depressing a key on the keyboard 50, for ex-

ample. Step 309 turns off the print session flag. In this manner the notice of 307 is displayed only the first time a command is made in step 300. Then in step 311, it is determined whether the user has indicated his desire to continue. If yes, then the process flows to step 306. If step 311 determines that the user indicates he does not wish to continue, then the process returns to the main program. This provision of a user option to continue, could also be employed for the SEC1 flag following step 314 and the restricted materials "rest" flag following step 326. Step 306 determines whether a cover page is to be printed prior to the printing of any other page of the document, displaying the copyright notice from the copyright string stored in column 60 of the default parameter table 56. In the case of the example shown in Fig. 5, a cover page is required and therefore step 308 prints a cover page containing the copyright notice "(C) ABC Co 1990." Then step 310 determines whether the copyright notice is to be printed on all pages. If it is, then step 312 will print the copyright notice string on all pages. The process then flows to step 314 where it is determined whether a security label is to be printed, by determining the presence of a corresponding flag bit in column 62 of table 56. If it is, then step 316 determines whether the security label is to be printed on a cover page preceding all other pages of the document. Then step 318 determines whether the security label is to be printed on every page of the document. In the case of the example in Fig. 5, there is no security label corresponding to the tag "[sec1]."

Step 320 then determines whether there is a "Do Not Copy" special element by determining whether there is a corresponding flag bit on in column 62 of table 56. In the case of the example of Fig. 5, there is a "Do Not Copy" label and therefore the process of Fig. 9 flows to step 322 which aborts the print command. At this time, a notice can be displayed on the display device 26 indicating that this is a "Do Not Copy" document, and printing has been terminated. The process will then return to the main program. Alternately, if step 320 determines that there is no "Do Not Copy" element, then the process flows to step 326 which determines whether there is a restriction element present by determining whether there is a corresponding flag bit turned on in column 62 of table 56. If there is, then the process flows to steps 328 and 330 which are similar to steps 306 and 310 above. The process then flows to step 344 to determine if there is another page to be printed. If there is, then the process flows back to step 302 to load the next page into the buffer for printing. If there is no next page, then the process returns to the main program.

Fig. 10 is a flow diagram of a sequence of operational steps to carry out the communication of the formatted text stream over a communications link using the communications adapter 48. The process begins with step 400 wherein the user requests the communication of the formatted text stream 25. Step 402 then determines whether there is a "Do Not Copy" security tag "[sec2]" or alternately a "Do Not Send" element with a tag "[sec3]" as would be determined by corresponding flag bits being on in column 62 of table 56. If there is, then the process flows to step 404 where the communications operation is aborted, and then it flows to step 406 where a notice is displayed on the display screen 26 that this is either a "Do Not Copy" or a "Do Not Send" document. The process then returns to the main program. Alternately, if step 402 determines that there is no "Do Not Copy" or "Do Not Send" label in the parameter table 56, then the process flows to step 403' where it is determined whether the copyright flag is present. If the copyright flag is present, the process flows to step 405 to determine if the copy session flag is on. If it is on, then the process flows to step 407' where the copyright string is displayed on the display 26 and a prompt is also displayed to the user requesting whether the user wishes to continue. If the user wishes to continue, the user must so indicate by pressing a key on the keyboard 50. Step 409 turns off the copy session flag. In this manner the notice to step 407 is displayed only the first time a command is made in step 400. Step 411' determines whether the user has indicated he wishes to continue. If the user wishes to continue, then the process flows to step 408. If the user indicates he does not wish to continue, then the process returns to the main program. Step 408 carries out the operation of sending the formatted text stream 25 over a communications link using the communications adapter 48. The process then returns to the main program.

Fig. 11 illustrates a flow diagram of a sequence of operational steps to carry out the writing of the formatted text stream 25 onto a magnetic storage disk using the disk drive 46. The process begins with step 420 wherein the user requests the write to disk operation. Then in step 422 it is determined whether there is a "Do Not Copy" element in table 56, by determining if the corresponding flag bit in column 62 is turned on. In the case of the example in Fig. 5, there is a "Do Not Copy" element present, and therefore the process flows to step 424 where the write to disk operation is aborted and then it flows to step 426 wherein a notice is displayed on the display 26 that this is a "Do Not Copy" document. This is followed by a return to the main program. Alternately, if step 422 determines that there is no "Do Not Copy" element in the formatted text stream 25, then the process flows to step 304" where it is determined whether the copyright flag is present. If the copyright flag is present, then the process flows to step 425 to determine if the copy session flag 425 is on. If it is on, the process flows to step 427 where the copyright string is displayed on the display 26 and the prompt is also displayed to the user requesting the user as to whether he wishes to continue. If the user wishes to continue, then the user must so indicate by pressing a key on the keyboard 50. Step 429 turns off the copy session flag. In step 431, it is determined whether the user has indicated he wishes to continue. If yes, then the process flows to step 428. Al-

ternately, if the user indicates he does not wish to continue, then the process returns to the main program. In step 428 the write operation is carried out writing the formatted text stream 25 onto a magnetic disk using the disk drive 46. The process then returns to the main program.

It is seen that the invention as disclosed herein provides an improved method for managing soft copy text of a structured document. The invention provides an improved method for displaying pages from a structured document in accordance with security restrictions imposed by its author. The invention further provides an improved method for managing the printing of the pages of a soft copy document, while maintaining the security restrictions imposed by its author. The invention further provides a flexible means for managing the copying or telecommunication of a soft copy of a structured document, in accordance with the security restrictions imposed by its author. Still further, the invention provides a flexible means for customizing the visual highlighting and for providing acoustical enunciations for localized portions of a soft copy document being displayed on a display screen.

A number of alternatives can be selected for the functioning of the tags set forth herein. For example, the local tag "locA" which is a local display tag shown in the default parameter table of Fig. 4, can have the local effect within the text where it is embedded, of prohibiting the display of the text if the user has not presented an appropriate password "pswd." This would enable an author to enforce a confidential restricted treatment for those portions of his document where the "locA" tag is embedded.

Although a specific embodiment of the invention has been disclosed, it will be understood by those having skill in the art that changes can be made in that specific embodiment without departing from the scope of the invention as defined in the claims.

Claims

1. Method for reproducing the contents of a structured document stored in a system including the steps of

   inputting into the system a formatted text stream (25) of a structured document, including indicia and indicium tags;

   searching said formatted text stream (25) to identify said indicia and said indicium tags, the indicia indicating proprietary and security restrictions and the indicium tags indicating locations in the text stream to be modified by said proprietary and security restrictions;

   and characterized by being adapted to comply with the proprietary and security restrictions of the document in that

   the method contains the further steps of:

   loading a parameter table (56) into a memory (22), said parameter table (56) specifying the procedures for complying with the proprietary and security restrictions of the document indicated by said indicia,

   producing a modified parameter table from said parameter table (56) and said indicia and indicium tags, said modified table indicating procedures to be used for the reproduction of the contents of said structured document;

   reproducing the contents of said structured document by means of said procedures indicated by said modified table.

2. Method according to claim 1, characterized in that the structured document is reproduced in a page format and said indicium tags include indicium tags to indicate that the proprietary or security restrictions should be implemented on every page of said structured document.

3. Method according to claims 1 or 2, characterized in that

   the structured document is reproducible in a page format and

   said indicium tags include indicium tags to indicate that said proprietary and security restrictions should be implemented on selected pages of said structured document.

4. Method according to anyone of claims 1 to 3, characterized in that

   the structured document is reproducible in a page format and

   said indicium tags include tags to indicate that said proprietary or security restrictions should be implemented only on the cover page of said structured document.

5. Method according to anyone of claims 1 to 4, characterized in that
   the indicia include that for reproduction of the structured document a notice of copyright restrictions of said structured document is indicated.

6. Method according to anyone of claims 1 to 5, characterized in that
   said indicia include instructions to prevent printing

of parts of said structured document.

7. Method according to anyone of claims 1 to 6, characterized in that
said indicia include instructions to prevent copying of a part of said structured document.

8. Method according to anyone of claims 1 to 7, characterized in that
said indicia include instructions to prevent the transmission of part of said structured document.

9. Method according to anyone of claims 1 to 8, characterized in that said

structured document is reproducible in a page format and

said indicia include instructions to print a notice on chosen pages of said structured document.

10. Method according to anyone of claims 1 to 9, characterized in that
said indicia include instructions to produce a sound during reproduction of parts of said structured document.

11. Method according to anyone of claims 1 to 10, characterized in that said indicia further include instructions to display said structured document in reverse video.

12. System to perform any of the methods of claims 1 to 11, including means for reproducing the contents of a structured document, said system comprising,

a processor (20)

a memory (22) which is connected to said processor (20) and to said means for reproducing the contents of said structured document and into which is placed said structured document as a formatted text stream, including indicia and indicium tags,

and means for searching said formatted text stream (25) to identify said indicia and said indicium tags, the indicia indicating said proprietary and security restrictions and the indicium tags indicating locations in the text stream to be modified by said proprietary and security restrictions;

and characterized by being

adapted to comply with the proprietary and security restrictions of the document by comprising

means for loading a parameter table (56) into a memory (22), said parameter table (56) specifying the procedures for complying with the proprietary and security restrictions of the document indicated by said indicia, and means for producing a modified parameter table from said parameter table (56) and said indicia and indicium tags, said modified table indicating procedures to be used for the reproduction of the contents of said structured document;

and means for reproducing the contents of said structured document by means of said procedures indicated by said modified table.

13. System according to claim 12, characterized by an enunciator (52) to produce a sound on detection of an appropriate indicium.

14. System according to claims 12 or 13, characterized by
a display (26) for displaying the document.

15. System according to anyone of claims 12 to 14, characterized in that
the means for reproducing the contents of said structured document comprise a disc drive (46) for storing the document on disc.

16. System according to anyone of claims 12 to 15, characterized by
a communication adapter(48) for transmitting the document.

17. System according to anyone of claims 12 to 16, characterized by
a printer (44) for printing the document.

Patentansprüche

1. Verfahren zum Reproduzieren des Inhalts eines in einem System gespeicherten strukturierten Dokuments mit den folgenden Schritten:

Eingeben eines formatierten Zeichenstroms (25) eines strukturierten Dokuments einschließlich Vermerken und Vermerketiketten in das System;

Durchsuchen des formatierten Zeichenstroms (25) zum Identifizieren der Vermerke und der Vermerketiketten, wobei die Vermerke Eigentums- und Sicherheitseinschränkungen kennzeichnen und die Vermerketiketten Positionen in dem Zeichenstrom kennzeichnen, die durch die Eigentums- und Sicherheitseinschränkungen zu modifizieren sind;

und dadurch gekennzeichnet, daß es angepaßt wird, um den Eigentums- und Sicherheitseinschränkungen des Dokuments zu entsprechen, insofern als das Verfahren weiterhin die folgenden Schritte enthält:

Laden einer Parametertabelle (56) in einen Speicher (22), wobei die Parametertabelle (5.6) die Prozeduren kennzeichnet, um den Eigentums- und Sicherheitseinschränkungen des Dokuments zu entsprechen, die durch die Vermerke gekennzeichnet sind,

Erzeugen einer modifizierten Parametertabelle aus der Parametertabelle (56) und den Vermerken und Vermerketiketten, wobei die modifizierte Tabelle Prozeduren kennzeichnet, die zur Reproduktion des Inhalts des strukturierten Dokuments zu verwenden sind;

Reproduzieren des Inhalts des strukturierten Dokuments mittels der Prozeduren, die durch die modifizierte Tabelle gekennzeichnet sind.

2. Verfahren gemäß Anspruch 1, dadurch gekennzeichnet, daß
das strukturierte Dokument in einem Seitenformat reproduziert wird und die Vermerketiketten Vermerketiketten enthalten, um zu kennzeichnen, daß die Eigentums- oder Sicherheitseinschränkungen auf jeder Seite des strukturierten Dokuments realisiert werden sollten.

3. Verfahren gemäß Anspruch 1 oder 2, dadurch gekennzeichnet, daß

das strukturierte Dokument in einem Seitenformat reproduzierbar ist und

die Vermerketiketten Vermerketiketten enthalten, um zu kennzeichnen, daß die Eigentums- und Sicherheitseinschränkungen auf ausgewählten Seiten des strukturierten Dokuments realisiert werden sollten.

4. Verfahren gemäß irgendeinem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß

das strukturierte Dokument in einem Seitenformat reproduzierbar ist und

die Vermerketiketten Vermerketiketten enthalten, um zu kennzeichnen, daß die Eigentums- oder Sicherheitseinschränkungen nur auf dem Deckblatt des strukturierten Dokuments realisiert werden sollten.

5. Verfahren gemäß irgendeinem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß
die Vermerke umfassen, daß bei der Reproduktion des strukturierten Dokuments ein Hinweis auf Copyrighteinschränkungen des strukturierten Dokuments angezeigt wird.

6. Verfahren gemäß irgendeinem der Ansprüche 1 bis 5, dadurch gekennzeichnet, daß
die Vermerke Instruktionen enthalten, um das Drukken von Teilen des strukturierten Dokuments zu verhindern.

7. Verfahren gemäß irgendeinem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß
die Vermerke Instruktionen enthalten, um das Kopieren eines Teils des strukturierten Dokuments zu verhindern.

8. Verfahren gemäß irgendeinem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß
die Vermerke Instruktionen enthalten, um die Übertragung eines Teils des strukturierten Dokuments zu verhindern.

9. Verfahren gemäß irgendeinem der Ansprüche 1 bis 8, dadurch gekennzeichnet, daß

das strukturierte Dokument in einem Seitenformat reproduzierbar ist und

die Vermerke Instruktionen enthalten, um auf ausgewählten Seiten des strukturierten Dokuments einen Hinweis zu drukken.

10. Verfahren gemäß irgendeinem der Ansprüche 1 bis 9, dadurch gekennzeichnet, daß
die Vermerke Instruktionen enthalten, um während der Reproduktion von Teilen des strukturierten Dokuments einen Ton zu erzeugen.

11. Verfahren gemäß irgendeinem der Ansprüche 1 bis 10, dadurch gekennzeichnet, daß die Vermerke weiterhin Instruktionen enthalten, um das strukturierte Dokument in Inversdarstellung anzuzeigen.

12. System, um irgendwelche der Verfahren der Ansprüche 1 bis 11 auszuführen, einschließlich Mitteln zum Reproduzieren des Inhalts eines strukturierten Dokuments, wobei das System folgendes umfaßt

einen Prozessor (20),

einen Speicher (22), der mit dem Prozessor (20) und den Mitteln zum Reproduzieren des Inhalts des strukturierten Dokuments verbunden ist und in den das strukturierte Dokument als ein formatierter Zeichenstrom einschließlich Vermerken und Vermerketiket-

ten angeordnet wird,

und Mittel zum Durchsuchen des formatierten Zeichenstroms (25), um die Vermerke und Vermerketiketten zu identifizieren, wobei die Vermerke die Eigentums- und Sicherheitseinschränkungen kennzeichnen und die Vermerketiketten Positionen in dem Zeichenstrom kennzeichnen, die durch die Eigentums- und Sicherheitseinschränkungen zu modifizieren sind;

und dadurch gekennzeichnet, daß es

angepaßt wird, um den Eigentums- und Sicherheitseinschränkungen des Dokuments zu entsprechen, indem es Mittel umfaßt, um eine Parametertabelle (56) in einen Speicher (22) zu laden, wobei die Parametertabelle (56) die Prozeduren kennzeichnet, um den Eigentums- und Sicherheitseinschränkungen des Dokuments zu entsprechen, die durch die Vermerke gekennzeichnet sind, und Mittel, um eine modifizierte Parametertabelle aus der Parametertabelle (56) und den Vermerken und Vermerketiketten zu erzeugen, wobei die modifizierte Tabelle Prozeduren kennzeichnet, die zur Reproduktion des Inhalts des strukturierten Dokuments zu verwenden sind;

und Mittel zum Reproduzieren des Inhalts des strukturierten Dokuments mittels der Prozeduren, die durch die modifizierte Tabelle gekennzeichnet sind.

13. System gemäß Anspruch 12, gekennzeichnet durch
einen Lautgeber (52), um bei der Feststellung eines entsprechenden Vermerks einen Ton zu erzeugen.

14. System gemäß Anspruch 12 oder 13, gekennzeichnet durch
eine Anzeige (26) zum Anzeigen des Dokuments.

15. System gemäß irgendeinem der Ansprüche 12 bis 14, dadurch gekennzeichnet, daß
die Mittel zum Reproduzieren des Inhalts des strukturierten Dokuments ein Plattenlaufwerk (46) zum Speichern des Dokuments auf Platte umfassen.

16. System gemäß irgendeinem der Ansprüche 12 bis 15, gekennzeichnet durch
einen DFV-Adapter (48) zum Übertragen des Dokuments.

17. System gemäß irgendeinem der Ansprüche 12 bis 16, gekennzeichnet durch
einen Drucker (44) zum Drucken des Dokuments.

Revendications

1. Procédé de reproduction du contenu d'un document structuré, stocké dans un système, comprenant les étapes consistant à :

introduire dans le système un flot de texte (25) formaté, d'un document structuré, comprenant des indices et des étiquettes d'indexation;

effectuer une recherche dans ledit flot de texte (25) formaté, afin d'identifier lesdits indices et lesdites étiquettes d'indexation, les indices indiquant les restrictions issues d'une protection par la loi et pour des raisons de sécurité, et les étiquettes d'indexation indiquant les emplacements du flot de texte, devant être modifiés au titre desdites restrictions issues d'une protection par la loi et pour des raisons de sécurité ;

et caractérisé par le fait d'être adapté pour satisfaire auxdites restrictions, issues d'une protection par la loi et pour des raisons de sécurité, imposées au document, en ce que le procédé comprend les étapes supplémentaires consistant à :

charger une table de paramètres (56) dans une mémoire (22), ladite table de paramètres (56) spécifiant les procédures à suivre pour satisfaire auxdites restrictions, issues d'une protection par la loi et pour des raisons de sécurité, imposées au document et indiquées par lesdits indices;

produire une table de paramètre modifiée, à partir de ladite table de paramètres (56) et desdits indices et des étiquettes d'indexation, ladite table modifiée indiquant les procédures devant être utilisées pour la reproduction des contenus dudit document structuré;

reproduire le contenu dudit document structuré, au moyen desdites procédures, indiquées par ladite table modifiée.

2. Procédé selon la revendication 1, caractérisé en ce que

le document structuré est reproduit sous un format de page, et

lesdites étiquettes d'indexation comprennent des étiquettes d'indexation destinées à indiquer que les restrictions, issues d'une protection par la loi ou pour des raisons de sécurité, devraient être mises en oeuvre pour chaque page dudit document structuré.

3. Procédé selon la revendication 1 ou 2, caractérisé en ce que

le document structuré est reproductible sous un format de page, et

lesdites étiquettes d'indexation comprennent des étiquettes destinées à indiquer que les restrictions, issues d'une protection par la loi et pour des raisons de sécurité, devraient être mises en oeuvre pour des pages sélectionnées dudit document structuré.

4. Procédé selon l'une quelconque des revendications 1 à 3, caractérisé en ce que

le document structuré est reproductible sous un format de page, et

lesdites étiquettes d'indexation comprennent des étiquettes destinées à indiquer que les restrictions, issues d'une protection par la loi et pour des raisons de sécurité, devraient être mises en oeuvre seulement pour la page de couverture dudit document structuré.

5. Procédé selon l'une quelconque des revendications 1 à 4, caractérisé en ce que
les indices comprennent l'information dictant qu'un avertissement, concernant les restrictions en matière de droits d'exploitation auxquels ledit document structuré est soumis, est donné pour pouvoir reproduire le document structuré.

6. Procédé selon l'une quelconque des revendications 1 à 5, caractérisé en ce que
lesdits indices comprennent des instructions destinées à empêcher toute impression de certaines parties dudit document structuré.

7. Procédé selon l'une quelconque des revendications 1 à 6, caractérisé en ce que
lesdits indices comprennent des instructions destinées à empêcher toute copie d'une partie dudit document structuré.

8. Procédé selon l'une quelconque des revendications 1 à 7, caractérisé en ce que
lesdits indices comprennent des instructions destinées à empêcher toute transmission d'une partie dudit document structuré.

9. Procédé selon l'une quelconque des revendications 1 à 8, caractérisé en ce que

ledit document structuré est reproductible sous un format de page, et

lesdits indices comprennent des instructions concernant l'impression d'un avertissement concernant des pages sélectionnées dudit document structuré.

10. Procédé selon l'une quelconque des revendications 1 à 9, caractérisé en ce que
lesdits indices comprennent des instructions pour produire un son, pendant la reproduction de parties dudit document structuré.

11. Procédé selon l'une quelconque des revendications 1 à 10, caractérisé en ce que
lesdits indices comprennent, en outre, des instructions destinées à afficher ledit document structuré en vidéo inversée.

12. Système pour mettre en oeuvre l'un quelconque des procédés selon les revendications 1 à 11, comprenant des moyens de reproduction du contenu d'un document structuré, ledit système comprenant :

un processeur (20),

une mémoire (22), connectée audit processeur (20) et audit moyen de reproduction du contenu dudit document structuré et dans laquelle ledit document structuré est placé sous forme de flot de texte formaté, comprenant des indices et des étiquettes d'indexation,

et des moyens pour effectuer une recherche dans ledit flot de texte formaté (25), afin d'identifier lesdits indices et lesdites étiquettes d'indexation, les indices indiquant lesdites restrictions, issues d'une protection par la loi et pour des raisons de sécurité,

et les étiquettes d'indexation indiquant les emplacements du flot de texte, devant être modifiés au titre desdites restrictions issues d'une protection par la loi et pour des raisons de sécurité;

et caractérisé par le fait

d'être adapté pour satisfaire auxdites restrictions, issues d'une protection par la loi et pour des raisons de sécurité, par le fait de comprendre :

des moyens, pour charger une table de paramètres (56) dans une mémoire (22), ladite table de paramètres (56) spécifiant les procédures à suivre pour satisfaire aux restrictions, issues d'une protection par la loi et pour des raisons de sécurité, imposées au document et indi-

quées par lesdits indices;

et des moyens, pour produire une table de paramètre modifiée, à partir de ladite table de paramètres (56) et desdits indices et des étiquettes d'indexation, ladite table modifiée indiquant les procédures devant être utilisées pour la reproduction des contenus dudit document structuré;

et des moyens, pour reproduire le contenu dudit document structuré, au moyen desdites procédures, indiquées par ladite table modifiée.

13. Procédé selon la revendication 12, caractérisé par un énonciateur (52), pour produire un son à la détection d'un indice approprié.

14. Procédé selon la revendication 12 ou 1 3, caractérisé par
un afficheur (26) pour afficher le document.

15. Procédé selon l'une quelconque des revendications 12 à 14, caractérisé en ce que
le moyen de reproduction du contenu dudit document structuré comprend une unité à disque (46), destinée à stocker le document sur disque.

16. Procédé selon l'une quelconque des revendications 12 à 15, caractérisé par
un adaptateur de communication (48), pour transmettre le document.

17. Procédé selon l'une quelconque des revendications 12 à 16, caractérisé par
une imprimante (44), pour imprimer le document.

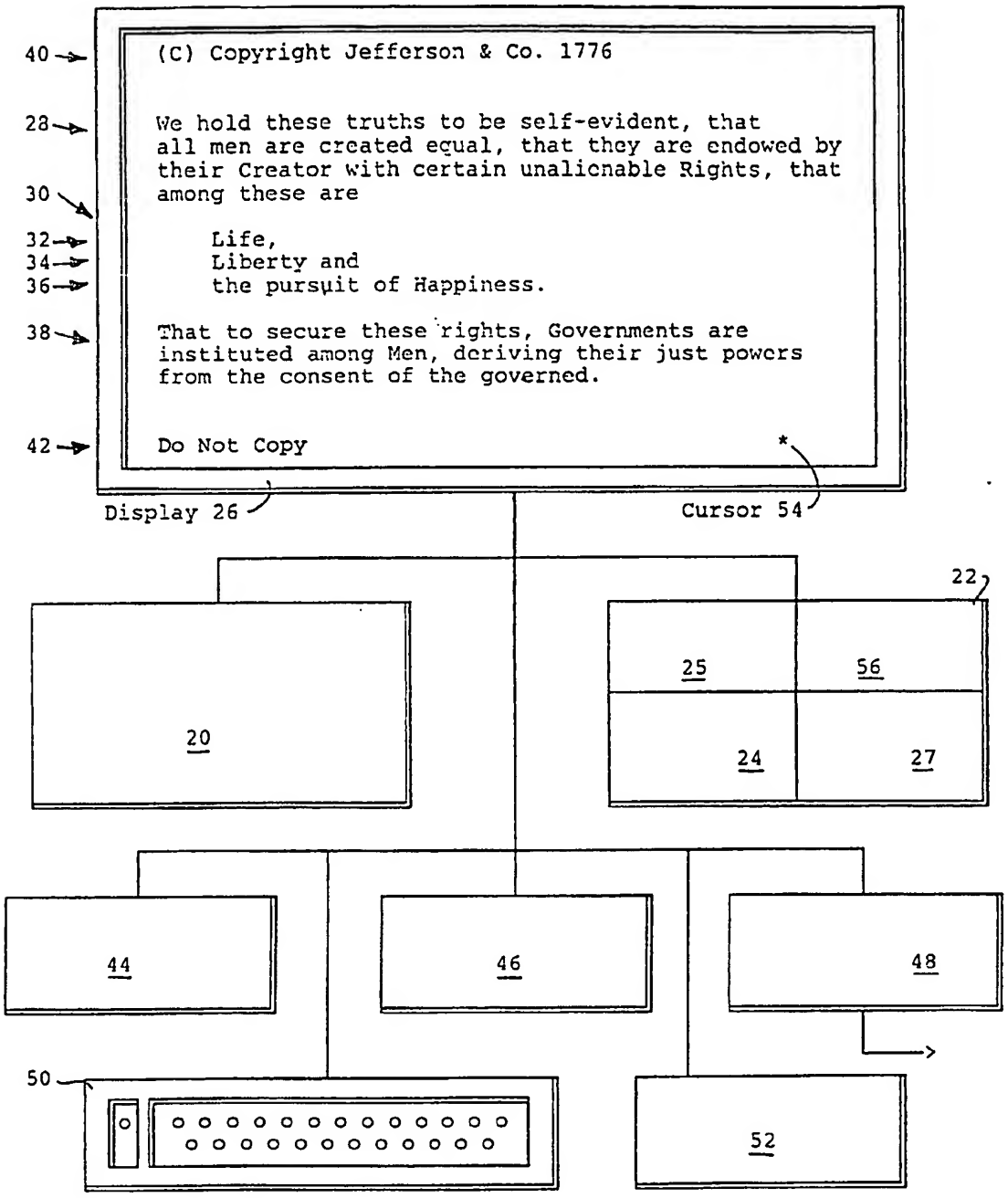

40
(C) Copyright Jefferson & Co. 1776
28
We hold these truths to be self-evident, that
all men are created equal, that they are endowed by
their Creator with certain unalienable Rights, that
30
among these are
32
Life,
34
Liberty and
36
the pursuit of Happiness.
38
That to secure these rights, Governments are
instituted among Men, deriving their just powers
from the consent of the governed.
42
Do Not Copy
*
Display 26
Cursor 54
22
25
56
20
24
27
44
46
48
50
52

Fig. 1

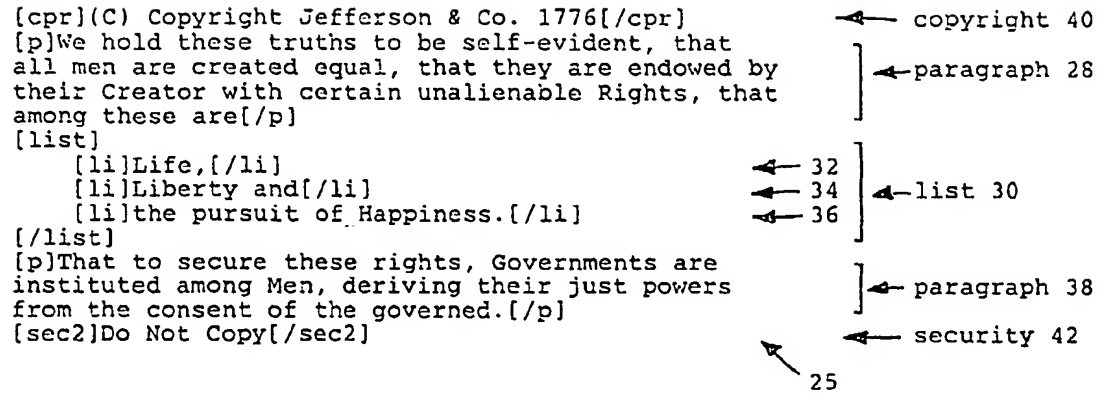

[cpr](C) Copyright Jefferson & Co. 1776[/cpr]
copyright 40
[p]We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are[/p]
paragraph 28
[list]
[li]Life,[/li]
32
[li]Liberty and[/li]
34
[li]the pursuit of Happiness.[/li]
36
list 30
[/list]
[p]That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed.[/p]
paragraph 38
[sec2]Do Not Copy[/sec2]
security 42
25

Fig. 2

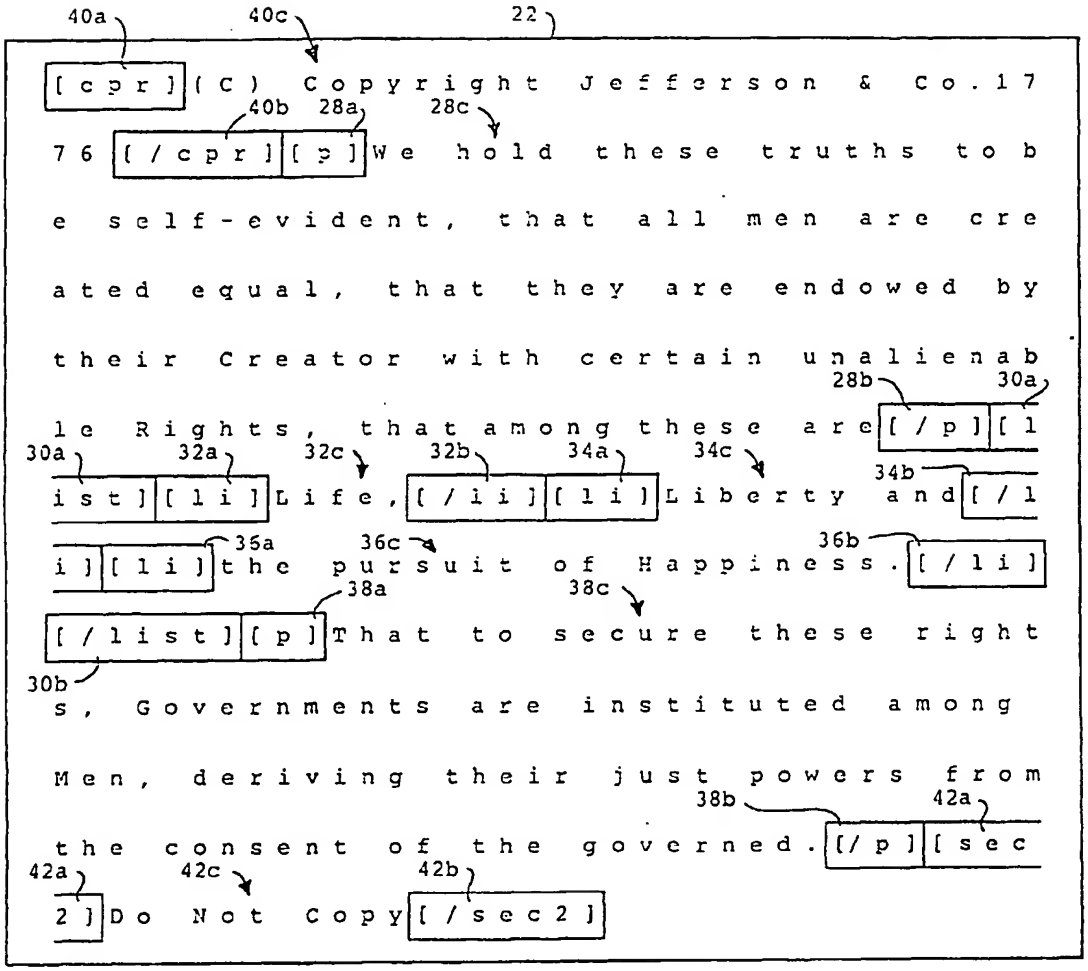

40a
40c
22
[cpr](C) Copyright Jefferson & Co.17
40b
28a
28c
76 [/cpr][p]We hold these truths to b
e self-evident, that all men are cre
ated equal, that they are endowed by
their Creator with certain unalienab
28b
30a
le Rights, that among these are[/p][l
30a
32a
32c
32b
34a
34c
34b
ist][li]Life,[/li][li]Liberty and[/l
35a
36c
36b
i][li]the pursuit of Happiness.[/li]
38a
38c
[/list][p]That to secure these right
30b
s, Governments are instituted among
Men, deriving their just powers from
38b
42a
the consent of the governed.[/p][sec
42a
42c
42b
2]Do Not Copy[/sec2]

Fig. 3

56

Tag	Strings Loaded from Tagged Text	On	Display			Printer			Disk Drive	Commu-nicate	Sound
			1st page	all pages	local elmnt coord	cover page	all pages	abort	abort	abort	play
cpr	Copyright		x			x					
sec1	Security Label			x		x	x				
sec2	Do Not Copy			x				x	x	x	
sec3	Do Not Send									x	
rest	Restriction		x			x					
pswd	Password										
	Local Page:										
locA	A (display)										
locB	B (voice)										x
locC	C (sound)										x

64 60 62 66

Fig. 4

56

Tag	Strings Loaded from Tagged Text	Flag on	Display		Printer			Disk Drive	Communicate	Sound
			1st page	all pages	local elmnt coord	cover page	all pages	abort	abort	play
cpr	(C) ABC Co 1990	x	x			x				
sec1	Security Label			x		x	x			
sec2	DO NOT COPY	x		x			x	x	x	
sec3	Do Not Send								x	
rest	Restriction		x			x				
pswd	Password									
	Local Element:									
locA	reverse video	x			1211					
locB	B (voice)									x
locC	10101110	x			1101					x

64 60 62 66

Fig. 5

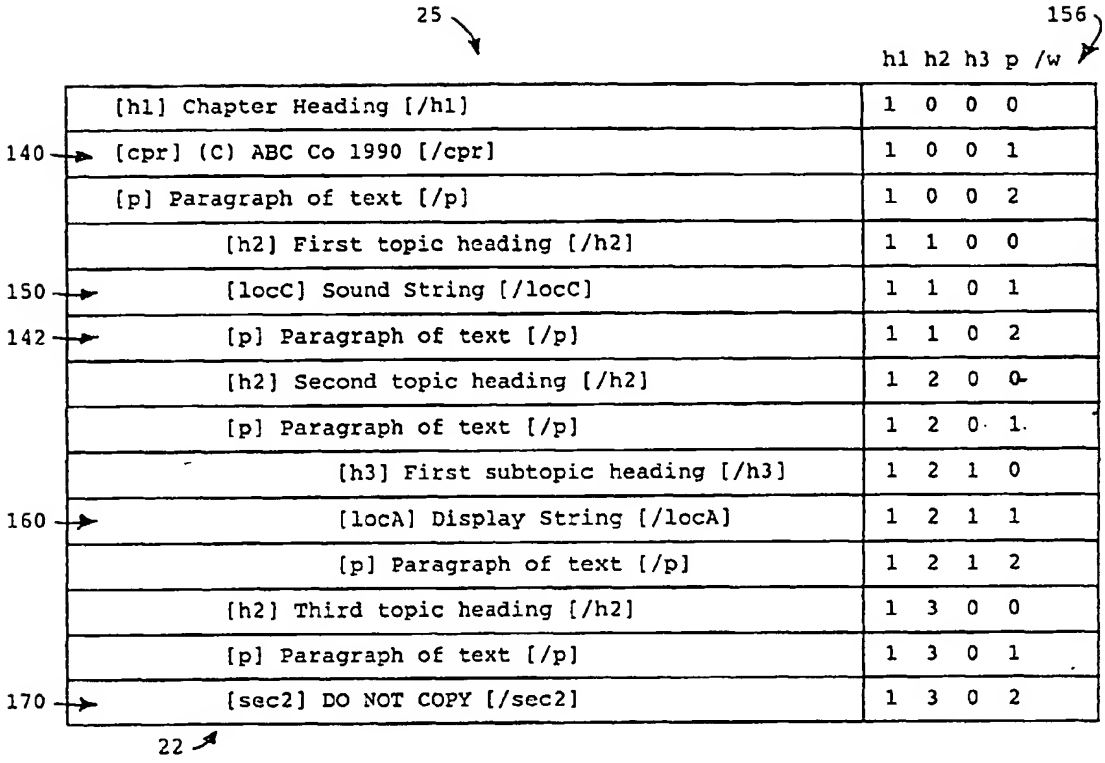

25
156
h1 h2 h3 p /w
[h1] Chapter Heading [/h1] 1 0 0 0
140
[cpr] (C) ABC Co 1990 [/cpr] 1 0 0 1
[p] Paragraph of text [/p] 1 0 0 2
[h2] First topic heading [/h2] 1 1 0 0
150
[locC] Sound String [/locC] 1 1 0 1
142
[p] Paragraph of text [/p] 1 1 0 2
[h2] Second topic heading [/h2] 1 2 0 0
[p] Paragraph of text [/p] 1 2 0 1
[h3] First subtopic heading [/h3] 1 2 1 0
160
[locA] Display String [/locA] 1 2 1 1
[p] Paragraph of text [/p] 1 2 1 2
[h2] Third topic heading [/h2] 1 3 0 0
[p] Paragraph of text [/p] 1 3 0 1
170
[sec2] DO NOT COPY [/sec2] 1 3 0 2
22

Fig. 6

Fig. 7

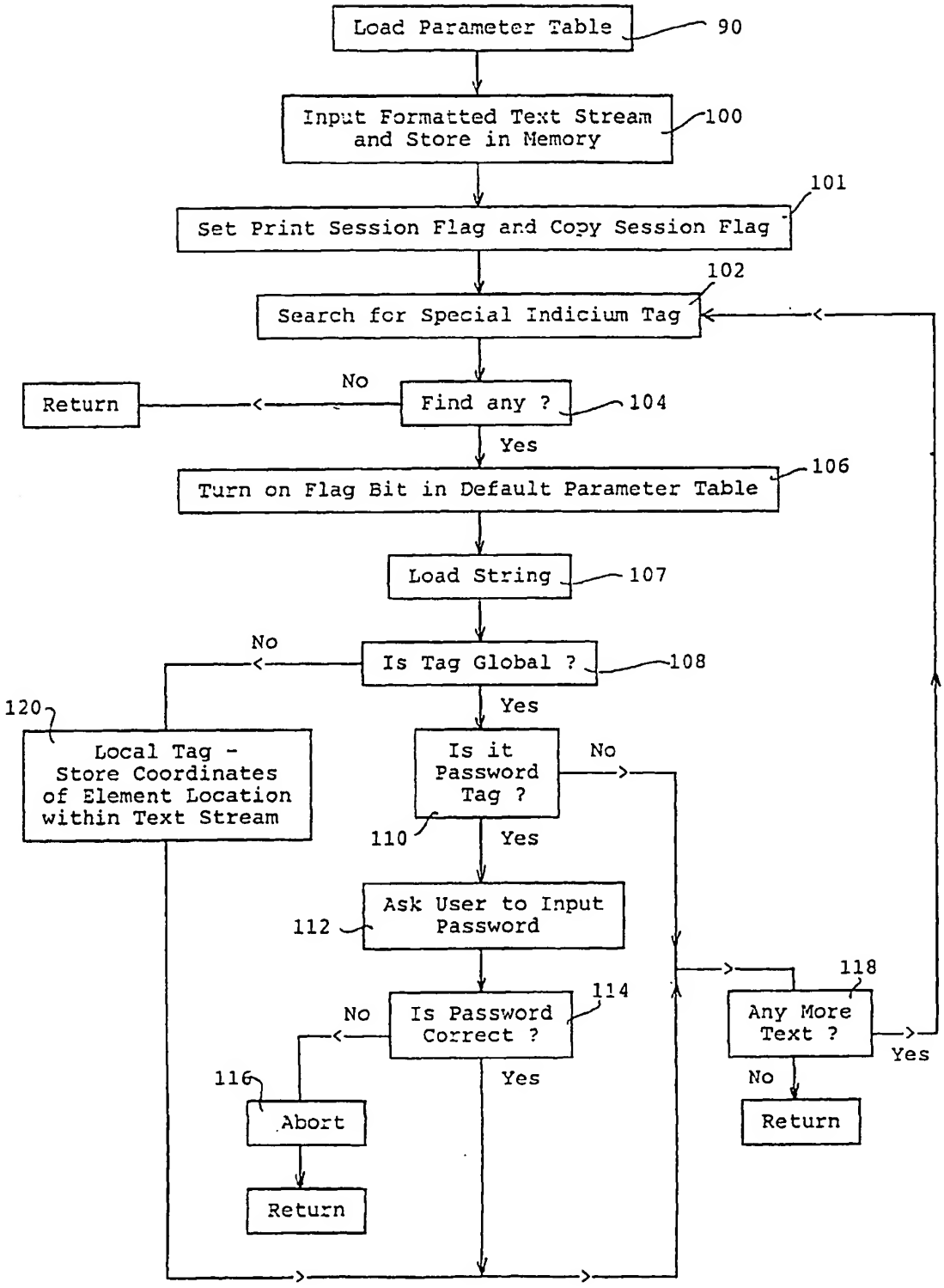
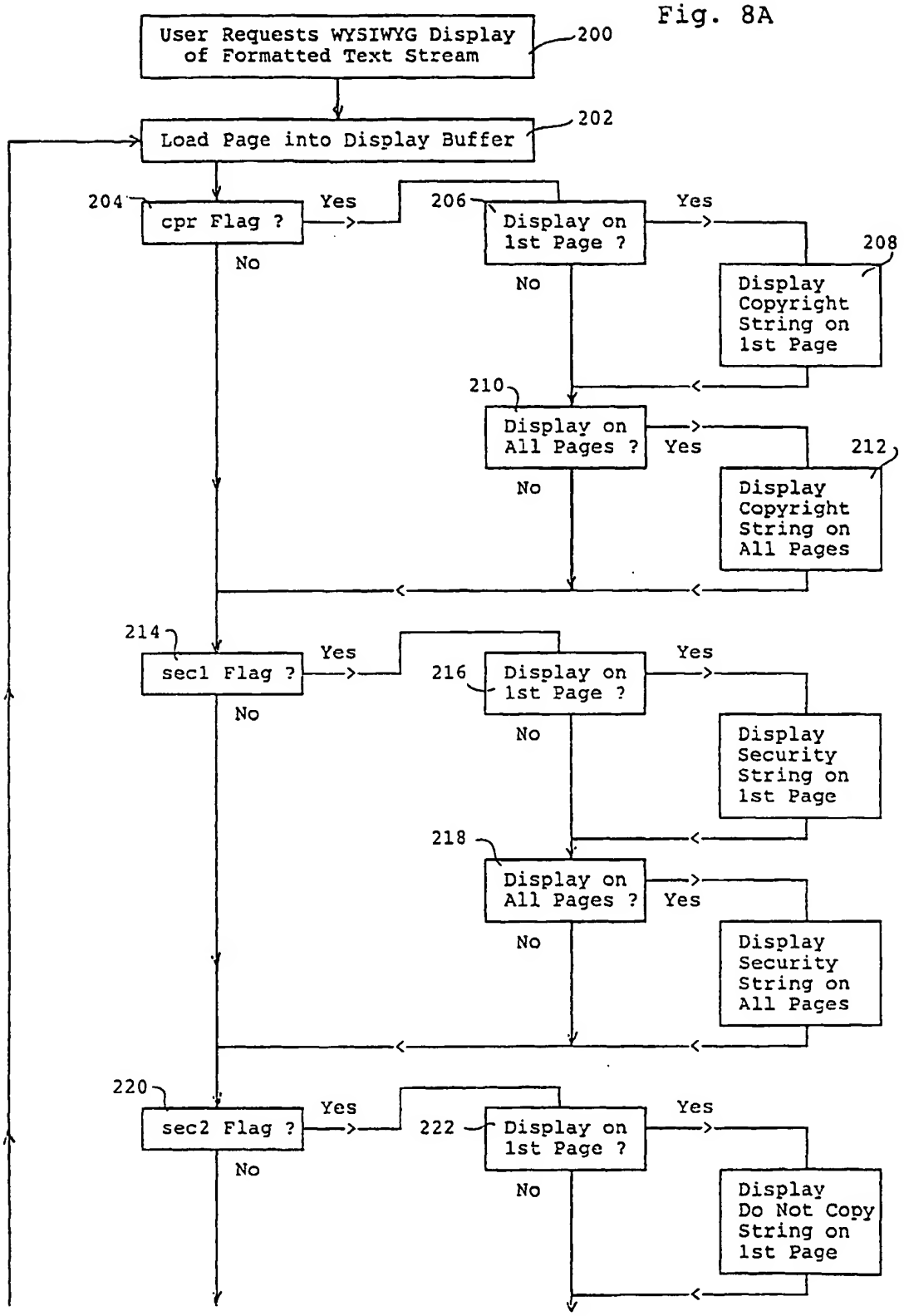

Load Parameter Table
90
Input Formatted Text Stream and Store in Memory
100
101
Set Print Session Flag and Copy Session Flag
102
Search for Special Indicium Tag
No
Return
Find any ?
104
Yes
106
Turn on Flag Bit in Default Parameter Table
Load String
107
No
Is Tag Global ?
108
120
Yes
Local Tag - Store Coordinates of Element Location within Text Stream
Is it Password Tag ?
No
110
Yes
Ask User to Input Password
112
118
No
Is Password Correct ?
114
Any More Text ?
Yes
116
Yes
No
Abort
Return
Return

Fig. 8A


User Requests WYSIWYG Display of Formatted Text Stream
200
Load Page into Display Buffer
202
204
cpr Flag ?
Yes
No
206
Display on 1st Page ?
Yes
No
208
Display Copyright String on 1st Page
210
Display on All Pages ?
Yes
No
212
Display Copyright String on All Pages
214
sec1 Flag ?
Yes
No
216
Display on 1st Page ?
Yes
No
Display Security String on 1st Page
218
Display on All Pages ?
Yes
No
Display Security String on All Pages
220
sec2 Flag ?
Yes
No
222
Display on 1st Page ?
Yes
No
Display Do Not Copy String on 1st Page

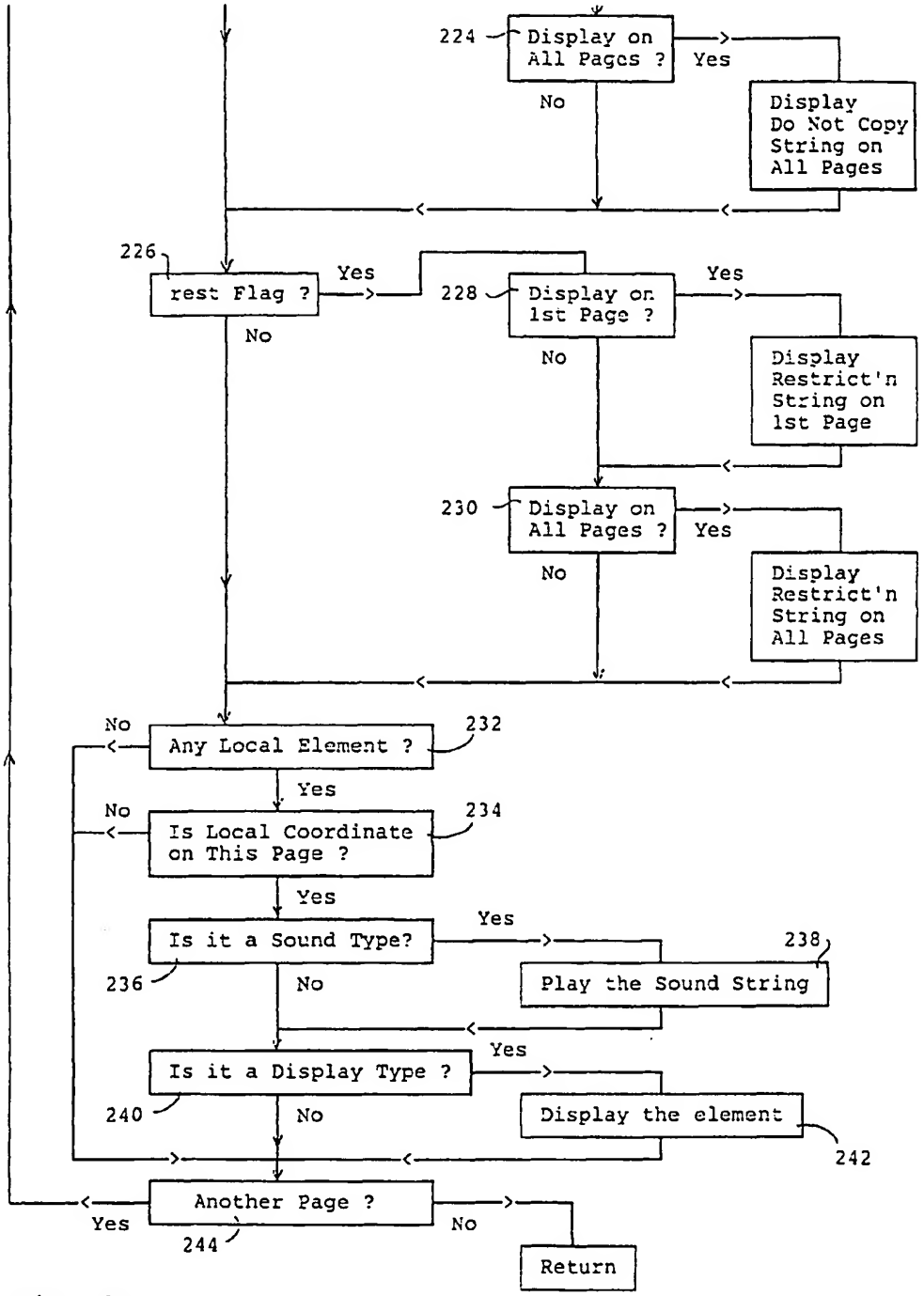

224
Display on All Pages ?
Yes
No
Display Do Not Copy String on All Pages
226
rest Flag ?
Yes
No
228
Display on 1st Page ?
Yes
No
Display Restrict'n String on 1st Page
230
Display on All Pages ?
Yes
No
Display Restrict'n String on All Pages
No
Any Local Element ?
232
Yes
No
Is Local Coordinate on This Page ?
234
Yes
Is it a Sound Type?
Yes
238
236
No
Play the Sound String
Yes
Is it a Display Type ?
240
No
Display the element
242
Another Page ?
Yes
244
No
Return

Fig. 8B

Fig. 8

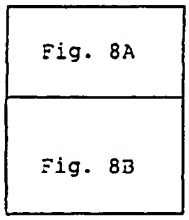
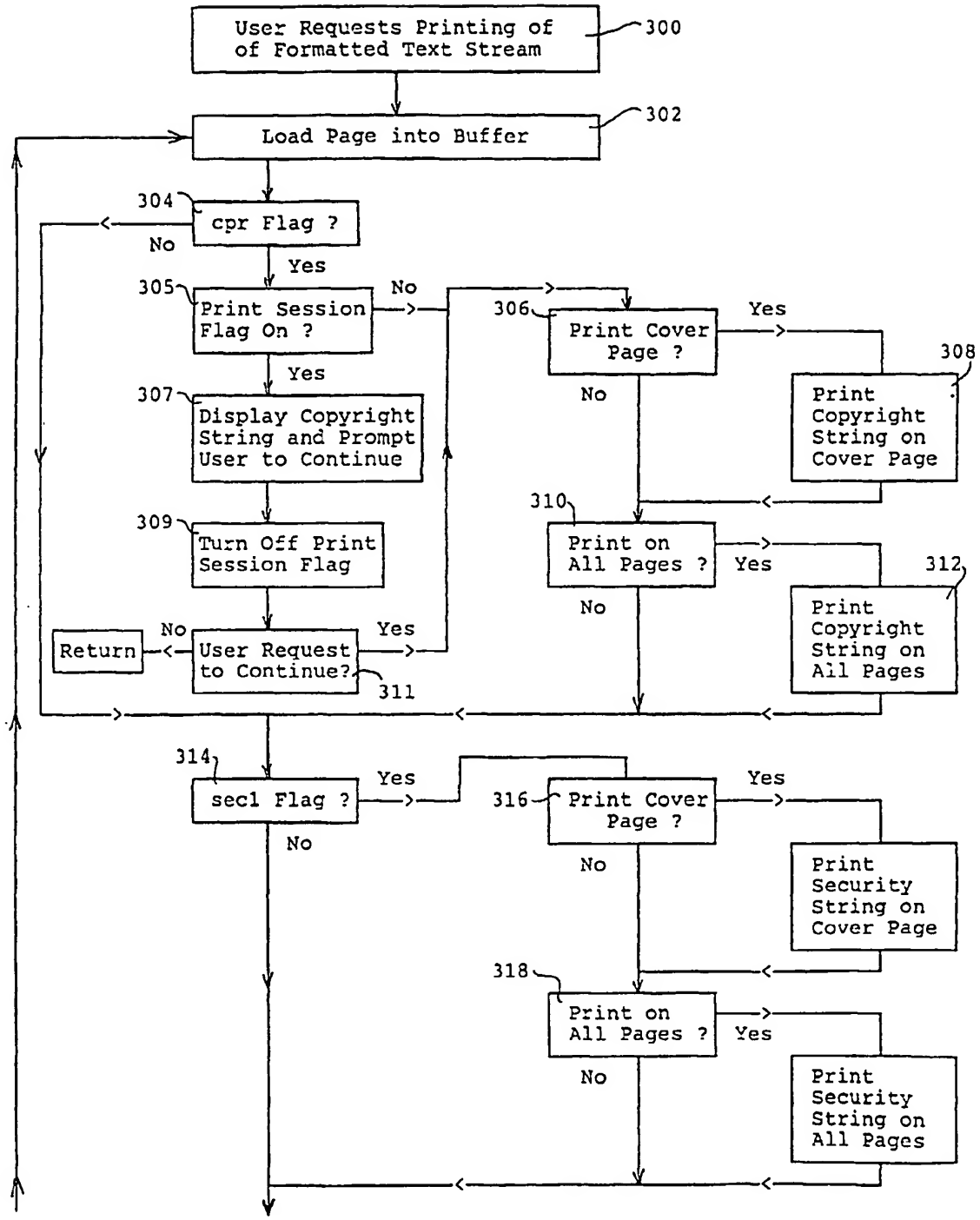


Fig. 8A
Fig. 8B

Fig. 9A


User Requests Printing of of Formatted Text Stream
300
Load Page into Buffer
302
304
cpr Flag ?
No
Yes
305
Print Session Flag On ?
No
Yes
306
Print Cover Page ?
Yes
No
308
Print Copyright String on Cover Page
307
Display Copyright String and Prompt User to Continue
309
Turn Off Print Session Flag
310
Print on All Pages ?
Yes
No
312
Print Copyright String on All Pages
Return
No
User Request to Continue?
Yes
311
314
secl Flag ?
Yes
No
316
Print Cover Page ?
Yes
No
Print Security String on Cover Page
318
Print on All Pages ?
Yes
No
Print Security String on All Pages

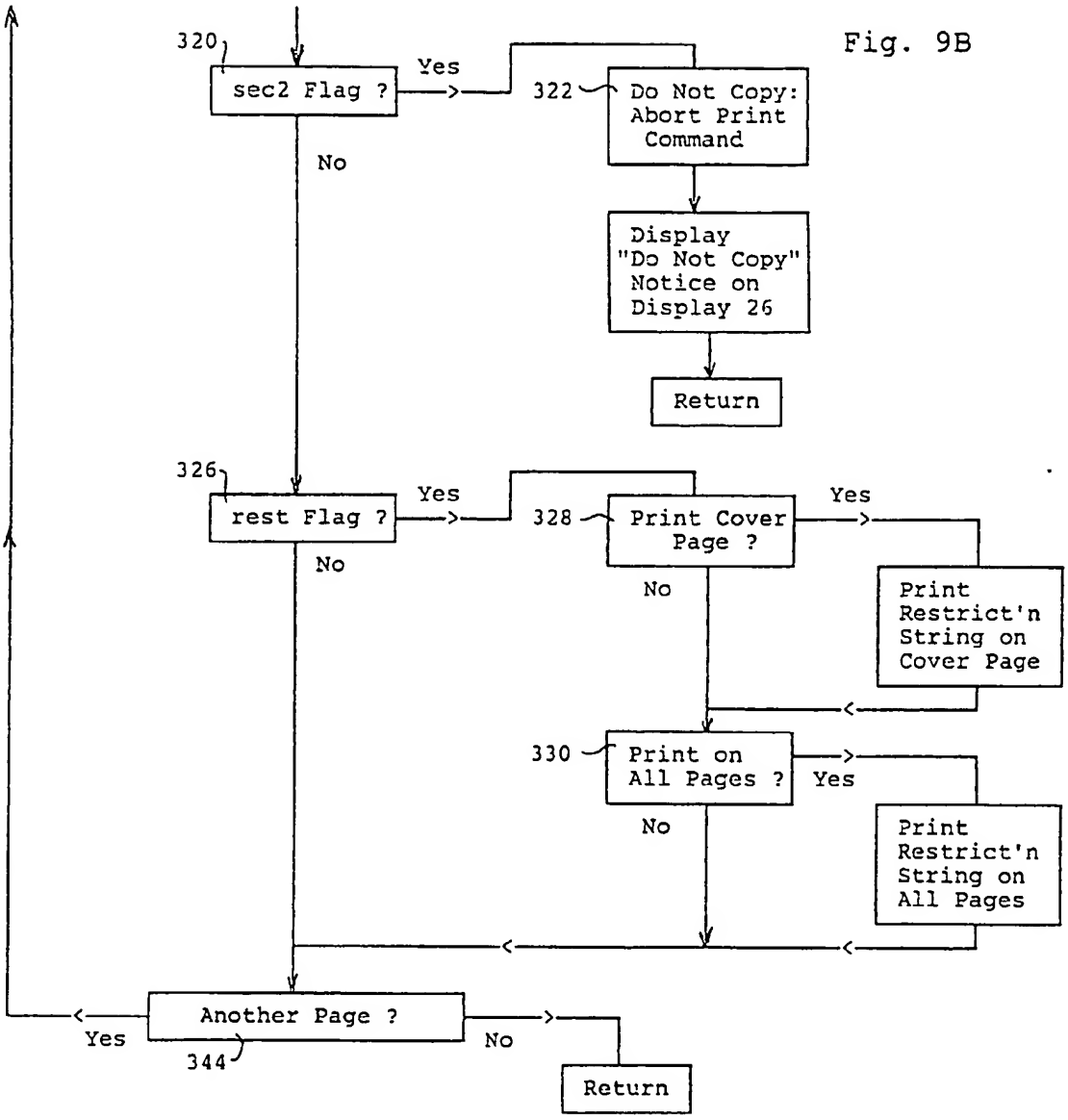


Fig. 9B

Fig. 9A

Fig. 9B

Fig. 9

Fig. 10

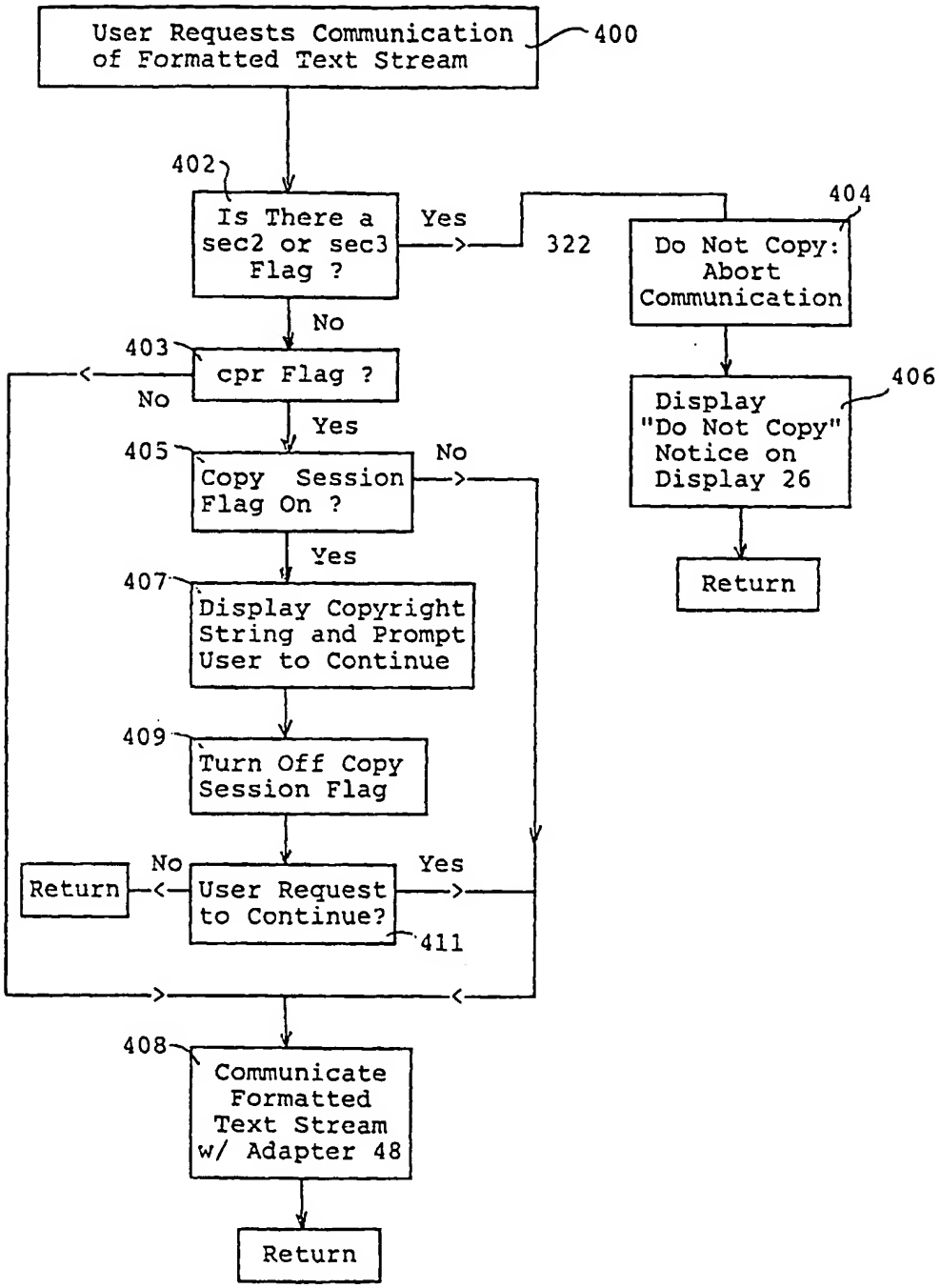
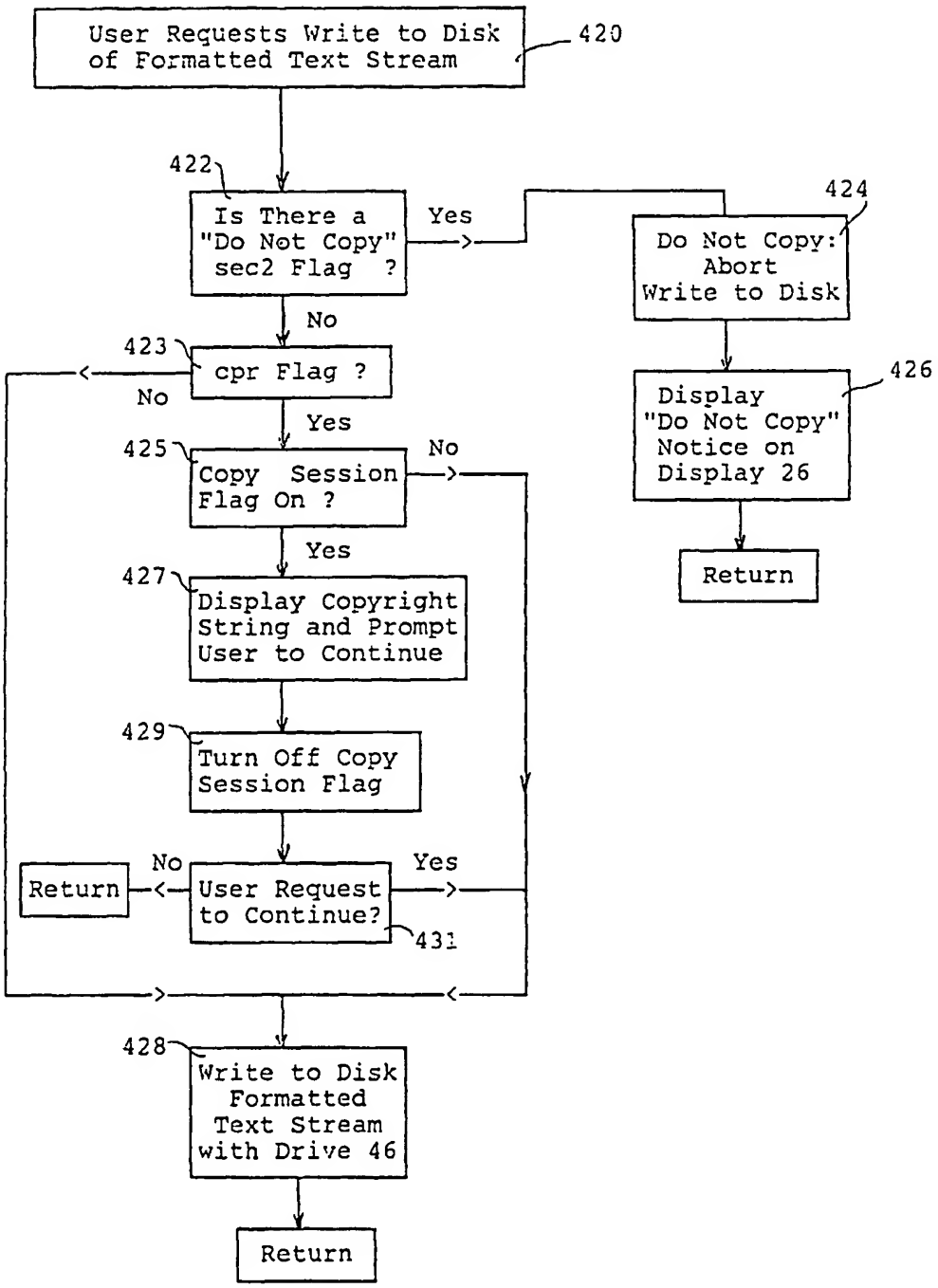

User Requests Communication of Formatted Text Stream
400
402
Is There a sec2 or sec3 Flag ?
Yes
322
404
Do Not Copy: Abort Communication
No
403
cpr Flag ?
No
Yes
405
Copy Session Flag On ?
No
406
Display "Do Not Copy" Notice on Display 26
Return
Yes
407
Display Copyright String and Prompt User to Continue
409
Turn Off Copy Session Flag
Return
No
User Request to Continue?
Yes
411
408
Communicate Formatted Text Stream w/ Adapter 48
Return

Fig. 11


User Requests Write to Disk of Formatted Text Stream
420
422
Is There a "Do Not Copy" sec2 Flag ?
Yes
424
Do Not Copy: Abort Write to Disk
No
423
cpr Flag ?
No
Yes
426
Display "Do Not Copy" Notice on Display 26
425
Copy Session Flag On ?
No
Return
Yes
427
Display Copyright String and Prompt User to Continue
429
Turn Off Copy Session Flag
No
Return
User Request to Continue?
Yes
431
428
Write to Disk Formatted Text Stream with Drive 46
Return